

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

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1. A method of communicating over a wireless indoor telecommunications channel, the method comprising the steps of:  
generating a pulsed signal in which information is carried in the phase of the pulsed signal;  
spreading the pulsed signal using a dispersive filter to form a chirp spread spectrum signal;  
transmitting the chirp spread spectrum signal over a wireless indoor telecommunications channel;  
receiving the chirp spread spectrum signal at a receiver;  
despreading the chirp spread spectrum signal using an inverse dispersive filter that is matched to the dispersive filter to yield a received pulsed signal; and  
recovering the information carried in the phase of the received pulsed signal.
  2. The method of claim 1 in which generating a pulsed signal comprises:  
modulating a data signal onto a carrier using a phase differential modulator; and  
converting the modulated carrier into a pulsed signal.
  3. The method of claim 1 in which the chirp signal is generated using plural dispersive filters, each assigned to a particular symbol value, and the chirp spread spectrum signal is despread using plural inverse dispersive filters matched to corresponding ones of the plural dispersive filters.
  4. The method of claim 1 in which recovering the information carried in the phase of the received pulsed signal comprises phase demodulating the received pulsed signal to yield a demodulated received pulsed signal and low pass filtering the demodulated received pulsed signal.
  5. The method of claim 1 in which the dispersive filter is a SAW filter.
  6. The method of claim 1 in which recovering the information carried in the phase of the received pulsed signal comprises applying an equalizer to the received pulsed signal to reduce intersymbol interference.

7. The method of claim 6 in which applying an equalizer to the received pulsed signal comprises training the equalizer with a slow phase demodulator and applying the received pulsed signal to the equalizer after demodulation with a fast phase demodulator.
- 5 8. A transmitter for communicating over a wireless indoor communications channel, the apparatus comprising:  
a pulsed signal generator;  
a dispersive filter connected to receive a pulsed signal from the chirp signal generator and output a chirp spread spectrum signal; and  
10 an RF section for upconverting the chirp spread spectrum signal for transmission.
9. The transmitter of claim 8 in which the pulsed signal generator comprises:  
a data source;  
a differential phase modulator connected to receive data from the data source; and  
an RF pulse generator connected to receive a modulated signal from the differential phase modulator.
- 15 10. The transmitter of claim 8 in which the chirp spread spectrum signal includes plural symbols, and the transmitter further comprises plural dispersive filters, each respectively associated with a corresponding one of the plural symbols.
- 20 11. A receiver for communicating over a wireless indoor communications channel with a transmitter defined by claim 8, the receiver comprising:  
an RF receiving section configured to produce a received chirp spread spectrum signal as output;  
an inverse dispersive filter matched to the dispersive filter and connected to receive the chirp spread spectrum signal from the RF receiving section and generate a received pulsed signal; and  
25 a data recovery section connected to receive the received pulsed signal and having data as output.
- 30 12. The receiver of claim 11 in which the data recovery section comprises a phase demodulator followed by a low pass filter and data extractor.
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